GOVERNMENT OF ANDHRA PRADESH

ABSTRACT

Animal Husbandry, Dairy Development and Fisheries Department – "The Andhra Pradesh Sheep Breeding Policy, 2023" – Approved - Orders - Issued.

ANIMAL HUSBANDRY, DAIRY DEVELOPMENT & FISHERIES (AH.II) DEPARTMENT

G.O.Ms.No.06 **Dated:30.01.2024**

Read the following:-

(1) GO Rt.No.08 of AH DD&F (AH.II) Department, dated:10.01.2023.
(2) From the Director, Animal Husbandry, A.P, Vijayawada, Lr.No. ROC.No.AHF02-POLOSRDP/1/2022-BBC, dated 14.06.2023.

***

O R D E R:

In the reference first read above, Government have constituted a Technical Committee for the development of the State Sheep Breeding Policy for Sheep.

2. In the reference second read above, the Director, Animal Husbandry has requested the Government to approve the draft "Sheep Breeding Policy, 2023 – Andhra Pradesh" to implement the Sheep Breeding Policy activities throughout the State to enhance the productivity of local Sheep through genetic up-gradation and selection breeding.

3. The Government have examined the policy in detail in consultation with technical advisory departments and accordingly hereby considered and approve the policy and annexed to this order.

4. The Director, Animal Husbandry shall take further necessary action accordingly in the matter.

(BY ORDER AND IN THE NAME OF THE GOVERNOR OF ANDHRAPRADESH)

GOPAL KRISHNA DWIVEDI
SPECIAL CHIEF SECRETARY TO GOVERNMENT (FAC)

To
The Director, Animal Husbandry, A.P, Vijayawada.
Copy to:
The Managing Director, A.P Sheep & Goat Development Corporation Federation Limited, Kothapet, Guntur.
The OSD to Minister (Animal Husbandry, Dairy Development & Fisheries),
The P.S to Special Chief Secretary to Government, AH,DD&F Dept.,
Law (E) Department.
SF / SC.

//FORWARDED::BY::ORDER//

Y. Siva Kumari
SECTION OFFICER

Annexure to G.O.Ms.No.06, AH,DD&F (AH.II) Dept., Dt.30.01.2024

INTRODUCTION

To date, there are 44 registered well-defined breeds of indigenous sheep, distributed in four agro-climatic zones of the country. They are known mainly for their mutton and wool production.

NATIONAL SCENARIO

- Total Sheep in the country is of 74.26 million as per the 2019 livestock census
- Ranking 3rd in the world after China and Australia.
- The current (2019) sheep population of India has increased by 14.13% over the 2012 census.
- The Percentage share of Sheep population of the total livestock 13.83%

SHEEP POPULATION IN THE MAJOR STATES

Sl. No	States/UTs	Population (In million) 2012	Population (In million) 2019	% Change
1	Teangana	12.8	19.1	48.51
2	Andhra Pradesh	13.6	17.6	30.00
3	Karnataka	9.6	11.1	15.31
4	Rajasthan	9.1	7.9	-12.95
5	Tamil Naidu	4.8	4.5	-5.98
6	Jammu & Kashmir	3.4	3.2	-4.19
7	Maharashtra	2.6	2.7	3.87
8	Gujarat	1.7	1.8	4.66
9	Odisha	1.6	1.3	-19.10
10	Uttar Pradesh	1.4	1.0	-27.25

The top five states with leading sheep populations together contribute more than 81% of the total sheep population of the country Contribution of Sheep to Mutton production.

- Sheep contributed 8.36% of India's overall meat production of 8.11 million tonnes in 2018-19 (BAHFS, 2019).
- Telangana, Andhra Pradesh, and Tamil Nadu were the top three mutton producing states, with 34.90, 23.83, and 8.94% share, respectively.

ANDHRA PRADESH SCENARIO:

- Andhra Pradesh has 176.29 lakh Sheep population and ranks 2nd in sheep population and 9th in wool production in the country.
- The per cent increase in sheep population was 29.79% during the year 2019 steady increase in sheep population over the years and was 12.18 % in 2007, 13.56 % in 2012, and 17.6 % in 2018.
- During the year 2021-22 A.P. stood 2nd in Meat production with 10.25 Lakh metric tonnes
- District Wise Sheep Population, number of households owning animals/sheep in Andhra Pradesh.

Sl. No.	District	Sheep population	% of sheep population	No of House holds
1	Srikakulam	738910	4.19	40188
2	Vizianagaram	540336	3.06	19481
3	Visakapatnam	371430	2.11	32570
4	East Godavari	316480	1.80	11742
5	West Godavari	478551	2.71	11310
6	Krishna	593007	3.36	16818
7	Guntur	704863	4.00	12823
8	Prakasam	2033479	11.53	34552
9	Nellore	1370812	7.78	23512
10	Chittoor	1696698	9.62	39395
11	Kadapa	1869861	10.61	35485
12	Kurnool	1985957	11.26	50958
13	Ananthapur	4926587	27.94	61708
	TOTAL :	**17629996**	**100%**	**706538**

LAND UTILIZATION

The percent share of the different segments of land use of the total geographical area in the year 2021-22 of the state: 162.97 lakh hectares is as follows

Sl No	Area classification	Area in Lakh hector	Percentage to total Geographical Area (%)
1	Net area sown (including fish culture)	60.38	37.05%
2	Forest	36.88	22.63%
3	Land put non-agricultural uses	20.82	12.78%
4	Barren and uncultivable land	13.35	8.19%
5	Current fallow lands	15.00	9.20%
6	Other fallow lands	8.94	5.49%
7	Cultivable waste lands	4.02	2.47%
8	Permanent pastures and other Grazing Lands	2.04	1.25%
9	Misce. Three crores and Groves not included in Net Area sow	1.54	0.94%

SOIL TYPES

There are various types of soils and the formation of a soil is primarily influenced by factors like climate, altitude and composition of bedrock etc. Disproportion in the distribution of rainfall in the country and excessive heat contribute special characters to the soils. Most of soils in the State are made up of a combination of three basic types, namely, sand, silt, and clay. 0f the 22 categories of soils adding to the total geographical area of the state, ten types are predominant and together account for over 88% of the area. (See in Agro climatic zones)

RAINFALL SCENARIO

The State received rainfall of 583.2 mm during the South West Monsoon period in 2022-23 as against the normal rainfall of 574.8 mm, indicating an excess of 1.5% (Normal). Kakinada, Bapatla, Anantapuramu and Sri Satyasai districts received excess rainfall and remaining districts in the state received normal rainfall.

During the North East monsoon period of 2022-23 (0ctober to December) an excess rainfall of 8.7% (Normal) was recorded. The rainfall received during this period is 310.4 mm as against the normal rainfall of 285.5 mm.

CLIMATE:

The climate of Andhra Pradesh is generally hot and humid. The summer season in this state generally extends from March to June. During these months the humidity level is quite high. The coastal areas have higher temperatures than the other parts of the state. In summer, the temperature generally ranges between20°C and 40°C. At certain places the temperature will be as high as 45 C during summer. The summer is followed by the monsoon season, which starts during June and continues till September. This is the season for heavy tropical rains in Andhra Pradesh. The major role in determining the climate of the state is played by South-West monsoons. About one third of the total rainfall in Andhra Pradesh is brought by the North-East monsoons around the month of October in the state. The winters in Andhra Pradesh are pleasant. October to February are the winter months in Andhra Pradesh. Since the state has quite a long coastline, the winters are comparatively mild. The range of winter temperatures is generally from 13°C to 30°C

MAJOR FORAGE SOURCES

Major forage sources: Major sources of crop residues - 3 categories of forage resources are identified in the state of Andhra Pradesh:

- Community grazing lands also called as Gochar lands in plain areas which have almost extinct due to diversified activities
- Trees having fodder values viz. prosopis/khejri, subabul, sesbania, glyricidia, ficus etc.
- Cultivated fodder crops viz. fodder jowar, fodder maize, stylosanthes, Napier grass, para grass, pillipesaru (cowpea etc. In recent years, Bajra Napier hybrid, guinea grass, lucerne, perennial fodder sorghum etc. are becoming popular in assured irrigation areas.

MAJOR SOURCES OF CROP RESIDUES

The crop residues after the separation of economic portion of almost all the food crops are used as fodder in many areas of the state. The type of crop and crop depend on the agro-climatic conditions prevailing in a given area. By and large the following crop residues are common in most of the areas:

Cereals : Rice straw Millets: JowarStover, BajraStover, Maize stover, Ragi straw etc.

Pulses : Greengram straw, Bengal gram straw, red gram straw etc.

Commercial crop : Sugarcane top etc.

Oilseeds : Groundnut straw, soybean straw etc.

Miscellaneous : Mulberry twigs

The Sheep require green, dry fodder and concentrate feed to exploit its genetic potential in order to yield more production.To increase production and to ensure faster growth of the livestock sector in the light of continuous reduction in grazing lands, on account of increased urbanization and as a result of which there is huge reduction in crop residue availability and shortage of fodder, and this requires an appropriate comprehensive strategy to address

AGRO-CLIMATIC ZONES

The state of Andhra Pradesh comprises of both dry interior lands in south west to long coastal climate in the east and north east. It consists of broadly five different soil types viz. red soil, alluvial soil, black soil, and peaty and marshy soils. Geographically, the state of Andhra Pradesh can be divided into two important regions i.e., Rayalaseema and Coastal Andhra, and there are 6 agro-climatic zones (ACZs) (Figure 3) spread across 13 districts of Andhra Pradesh viz. High altitude zone, Krishna zone, Godavari zone, North coastal zone, Southern zone and Scarce rainfall zone.

Sl No	Zone	Districts	Rainfall (mm/ha)	Temperature	Soil type	Crops grown
1	North coastal zone	Srikakulam, Vizianagaram, Visakhapatnam	South-west monsoon 1,000-1,100 mm	Max,29-42°C Min 18-27 °C	Red soils with clay base, pockets of acidic soils, late rite soils with PH 4-5.	Rice, Groundnut, mesta, Jute, Sunhemp, maize Sesamum, Sorghum, Pearl millet, blackgram and horticultural crops
2	Godavari zone	East Godavari, West Godavari	South-west monsoon 800-1,100 mm	Max,29-42°C Min 16-24 °C	Deltaic alluvium, red soils with clay, black cotton soils red loams, coastal sands and saline soils	Rice, groundnut, sorghum, pearl millet, maize sugarcane and horticultural crops
3	Krishna zone	Krishna, Guntur, Prakasam	South-west monsoon 800-1,100 mm	Max,29-42°C Min 16-24 °C	Deltaic alluvium, red soils with clay, black cotton soils, red loams, costal sands and saline soils	Rice, groundnut, sorghum, pearl millet, maize sugarcane and horticultural crops.
4	Southern zone	Chittoor, Kadapa, Nellore	South west monsoon 700-1,000 mm	Max,28-40°C Min 13-27 °C	Red loamy soils shallow to moderately deep	Rice, groundnut, cotton, sugarcane, Tobacco, millets and horticultural crops.
5	Scarce rainfall zone	Kurnool, Ananthapur	South-west monsoon 500-750 mm	Max,32-40°C Min 13-28 °C	Red earths with loamy soils, red sandy, soils and black cotton soils in pockets.	Cotton, sorghum, millets, Groundnut, pulses and rice. Horticultural crops.
6	High altitude & tribal areas zone	High altitude &tribalareas of Srikakulam, Visakhapatnam , East Godavari Districts	South-west monsoon-1,400 mm	Max,17-35°C Min 6-24°C	Hill slopes, undulating transported soils	Horticultural crops, millets, pulses, Chilly, turmeric pepper, coffee, cocoa

BREED STATUS

The 18th livestock census (2007) for the 1st time recorded a breed-wise population of sheep. At that time, the population of all well-established breeds (31.98 million) constituted only 47.15% of indigenous sheep and 44.69% of the total sheep population of 71.55 million. The top three populations were of Nellore, Marwari, and Deccani breed contributing 19.44, 16.28, and 13.54%, respectively, of the total population of all the recorded breeds. However, as per the breed survey, 2013, the estimated population of 37 recognized/registered sheep breeds (pure + graded) was 36.11 million which was about 58.92% of the total population of all indigenous including nondescript sheep (61.29 million). The latest livestock census (2019) report, though mentioned in its preface that it was 'designed to capture a breed-wise number of animals' the same has not been published. Till date, the National Bureau of Animal Genetic Resources (NBAGR), Karnal has registered 44 sheep breeds

POPULATION SHARE OF IMPORTANT BREEDS

The breed distribution as per the last breed survey (2013), the sheep breeds occupying the top five positions in terms of their share of the total indigenous population were **Nellore (19.17%),** Deccani (10.15%), Marwari (6.70%), Bellari (3.79%) and Jailsalmeri (2.92%). A large proportion (41.08%) of the indigenous sheep population of the country was of nondescript type.

SHEEP BREEDS

Breeds of Sheep in different agro-ecological regions in India and their major products.

North Temperate	North-Western and Semi-Arid	Arid	Southern peninsular		Eastern
Bhakarwal (CW)	Chokla	(CW)	Bellary	(MCW)	Balangir (MCW)
Changthangi (CW)	Hissardale	(AW)	Coimbatore	(MCW)	Bonpala (M CW)
Gaddi (CW)	Jaisalmeri	(MCW)	Daccani	(M)	Chottanagpuri
Gurez	Jalauni	(MCW)	Hassan	(M)	Ganjam (MCW)
Karnah	Kheri	(MCW)	Kanguri	(M)	Garole
Kashmir	Magra	(CW)	Kilakarsal	(M)	Tibetan
Poonchi	Malpura	(MCW)	Madras Red	(M)	
Rampur	Marwari	(MCW	Mandya	(M)	
Bushair (CW)	Muzaffarnagar i	(MCW	Mecheri	(M)	
	Nali	(CW)	Nellore	(M)	
	Patanwadi	(CW)	Nilgiri	(AW)	
	Pugal	(MCW)	Rammand white	(M)	
	Sonadi	(MCW)	Tiruchy Black	(M)	
	Munjal (M)		Vembur	(M)	

(AW), Apparel wool; (CW), Carpet wool; (MCW), Mutton and Carpet wool; (M), Mutton.

SHEEP BREEDS OF A.P

Small Ruminants are dependent on the natural resources, and agriculture wastes. Nellore Jodipi and Nellore Brown are the predominant sheep breeds available in the state. Nellore and Prakasam districts are the main breeding tracts for Nellore Jopdipi and YSR Kadapa district is known for Nellore Brown. Nellore Breed is the tallest breed in the country and good mutton purpose breed. The lamb birth weight is around 2.5 kgs to 3 kgs wherein other parts of the state mostly non descriptive sheep are predominant which are comparatively less productive than the true breed.

- Nellore Brown- Krishna, Kadapa, Kurnooland Ananthapur.
- NelloreJodipi/Palla–Prakasam,Nellore.
- Naagavali Breed – Srikakulam and Vizianagaram Districts
- Macherla - Guntur and parts of Krishna and PrakasamDistrict
- Deccani , Nellore Brown and Nellore Jodipi – North Kurnool and Parts of Anantapur

NELLORE

The Nellore is a meat sheep breed native to South coastal and Rayalaseema of Andhra Pradesh, primarily the Nellore, Prakasam and parts of Chittoor District.

The breed is found in three distinct colours- white (palla), white with black spots on the face (jodipi) and red-brown (dora). The males are horned and the females are polled. The birth weight of lambs is 2.5 - 3 kg. These are relatively tall animals with little hair except at the brisket[1], withers and breech.

The ears are long and drooping, the tail is short and thin and a majority of the animals have wattles[3]. Age at first lambing is 28 months and the lambing percentage in farmers' flocks through natural service is 73%. The lambing interval is about 14 months, and the litter size is primarily single. Breeding is pure and males are selected on the basis of body size. Dressing percentage on pre-slaughter live-weight basis is 47% and age at slaughter is generally six months.

NAGAVALI BREED:

Phenotypic characterization of Nagavali sheep population was completed. Nagavali is mutton type sheep inhabiting in north coastal districts of Andhra Pradesh comprising of Srikakulam, Vizianagaram and Visakhapatnam districts. The name Nagavali derives from Nagavaḷi River which flows in to Bay of Bengal near Kallepalli village of Srikakulam district. This sheep is also

known as Karella in local language. In Vizianagaram district it is known as Vizianagaram. Nagavali animals are medium in size with white coat color and black patches around eyes, distal part of ears, both sides of neck region, perineum and lower extremities. Females are polled and males are horned. Ears are medium to large in size and pendulous/ semidrooping. The ear length ranged from 7 to 17 cm The average adult body weight of males and females animals were 39.43 ±1.79 and 28.39 ± 0.43 kg, respectively which ranges from 28 to 54 kg in males and 20 to 38 kg in females.

The overall body length, height, chest girth, paunch girth, face length, face width, ear length and tail length were 61.25 ±0.49 , 71.48 ± 0.45 , 76.20 ±0.55, 74.96 ± 0.63, 21.70 ± 0.20, 12.82± 0.13, 13.78 ± 0.22 and 9.19 ± 0.14 cm respectively. Body weight of lambs in the age groups of 1-3 and 3-6 months ranges between 6 to 18 and 10 to 20 kg respectively. The age at first breeding in rams and age at first lambing in ewes were about 18 and 24 months, respectively. It is a famous for quality/tasty mutton production.

MACHERLA

Macherla animals are medium to large in size, mainly in white coat colour with large brown or black patches in the body, face and legs. The animals with brown patches are known as Macherla brown in breeding area. Convex nasal bridge, leafy ears, black muzzle and black/brown and white coat colour is predominant. Males are horned and females are polled, however some females are noticed with horns in few flocks. The horns are oriented backward, downward and forward. Ears are medium to large in size and leafy/semi-drooping.

Tail is very small and thin. The adult body weight ranged from 38 to 69 kg in rams and 25 to 60 kg in ewes. The overall body length, height, chest girth, face length, face width, ear length and tail length were 70.07±0.32, 77.05±0.31, 87.75±0.41, 25.46±0.21, 10.49±0.08, 16.11±0.09 and 9.67±0.15 cm, respectively. The study revealed that the Macherla sheep is phenotypically different from other sheep breeds of the region and famous for mutton production as well as livelihood security of the farmers maintaining this sheep population.

BREED IMPROVEMENT PROGRAMMES UNDER TAKEN EARLIER

- Efforts were made in cross breeding the Native Deccani and Nellore breeds with exotic breeds like Ramboullet, Dorset Horn, Merino and Corriedale in the past without encouraging results.
- Attempts were also made to cross the local breed with North Indian hairy breeds like Magra, but the Magra could not adapt well to the A.P. Climatic conditions.
- Superior quality breeding Rams especially Deccani and Nellore breeds were multiplied at Sheep Demonstration Units/Farms in the state.
- The breeding Rams from these farms were supplied to the needy shepherds/beneficiaries under different Government sponsored programmes.

SMALL RUMINANT DEVELOPMENT POLICY (2016-20) IN ANDHRA PRADESH:

Government of AndraPradesh introduced Small Ruminant Development Policy (2016-20) with a view to develop A.P a prominent state for Mutton Production through a sustainable growth in Small Ruminant sector. But the implementation of the policy could not be happen due to Government mainly focused on large animals like cattle and buffalo breeding and development.

Role of Andhra Pradesh Sheep and Goat Development Cooperative Federation in Small Ruminant Development:

It is the Apex level body constituted by Government and Elected representatives from District Unions. It is the 3 tier system having district level 13 District Unions and Villages level Primary Sheep Breeders Cooperative Societies.

NCDC has sanctioned 220.0 crores for Development of Small Ruminants in 11 districts of A.P. The Government of A.P. through the APSGDCFL received financial assistance of Rs 65.00 Crores from NCDC for rearing Units and Breeding Farms.

The main objective of the NCDC Project was

1. Improved quality animals and better supply of breeding Rams
2. Improve the livelihood of small Ruminants by promoting rearing units.
3. Developing skill pool of cooperatives for taking upsmall ruminant development projects.

Efforts made from the Federation to check the Inbreeding. The Federation was organized

1. Breeding Ram Exchange programmes
2. Breeding Ram Shows
3. Shepherd training Programmes
4. Assist in conducting of Brucellosis Screening in sheep and Goats

In the last few Decades, there is a paradigm shift from the agriculture farming to livestock farming. In view of quick economic returns the sheep rearers have different breeding Practices and preferences. In all these approaches high economic returns are most important driving force for the farmers. The Sheep farmer desires enhanced productivity with low inputs.

Technocrats advocate for the conservation of native germplasm in view of long-term benefits. In view of this state desires to have a sheep breeding policy to improve the productivity of the sheep while conserving the native germ plasm in sustainable manner.

DRAFT SHEEP BREEDING POLICY PROPOSED

- Previously, series of sessions were held on the topics like Overview of sheep Breed improvement in India, Breeding strategy for improvement of Sheep production in Andhra Pradesh, options for Breed improvement in A.P and Sheep Genetic improvement initiatives at Nimbkar Agricultural Research Institute and in other states of India.
- The state findings were also presented based on the desk study, field study data on various breeds and also farmers' perceptions. Considerable time was set apart for discussing farmers issues besides farmers-scientists interaction and presentations on various breeding options suited for the state.
- Various eminent scientists from national institutes and Universities took part in the group discussions along with farmers and Animal Husbandry departmental experts suggested suitable options for the state. The papers made in the workshop and recommendations were brought out for taking necessary action.

RECOMMENDATIONS OF THE EACH SESSION:

SESSION: BREED IMPROVEMENT SCENARIO IN INDIA:

- Indiscriminating cross breeding should be stopped in the field conditions where exotic inheritance level is difficult to maintain and biological resources are meagre.
- Selective Breeding will be best choice for higher body weight gain in indigenous sheep breeds viz Nellore and Deccani.
- Nellore and Deccani are essentially mutton purpose breeds and they should be genetically improved through open Nucleus Breeding System (ONBS)

- Cross Breeding should be restricted to non-descriptive breeds where feed and fodder resources are abundant.
- Intensive Sheep Breeding is advocated only for the resourceful breeds where feed and fodder resources are abundant.
- Introduction of Nellore sheep in Deccani breeding tract should be discouraged.

SESSION: STUDY ON ANDHRA PRADESH SHEEP BREEDING POLICY INITIATIVE:

- There is a need to strengthen the breeding inputs like supply of superior breeding rams of desired breed either free of cost or subsidized rtes
- There is a need for awareness on optimum sex ratio.
- Ram Exchange has to be followed every two years to avoid inbreeding.
- Proper selection of breeding Rams has to be ensured.

During the year 2006-07 Presentation of group work who had done in the field study, scientists from the university, Experts from the National Research Institutes and Experts with the specialization in the Animal Genetics and Breeding discussed on the following lines

1. Analysis of the existing situation
2. Possible breeding options
3. Approaches to the suggested breeding options
4. Strategies to be adopted.

BREEDING STRATEGIES RECOMMENDATIONS FOR ANDHRA PRADESH:

1. Livestock breeding policy in the fast changing scenario needs to be reviewed keeping in view the farmers needs and perception, demand and supply of animal products like meat, milk and wool, availability of feeds and fodder, existing breeds and their performance, infrastructure and support system in different agro climatic zones.

2. Attention should be given to raise animal productivity from low to intermediate level rather than providing genetic potential for productivity that cannot be supported economically and might seriously hamper sustainability of natural resources.

3. In case of crossbreeding, implementation must be considered situation specific i.e., resources needed for crossbreds must be available. Therefore, breeding of livestock should be in a way that matches the available and accessible resources.

4. Selective breeding of Nellore, Bellary and Deccani in the respective native tracts for improving body weight and prolificacy. Crossbreeding of Deccani and Bellary with Rambouillet or Bharat Merino to improve body weight, wool yield and wool quality may be taken up in a limited area. Sheep Breeding Farm, Mamidipally should maintain Rambouillet and Bharat Merino flocks and other state Farms should develop nucleus flocks for multiplication of improver rams in adequate numbers.

5. Fecundity may be improved by proper selection for high prolificacy and adopting appropriate management to support it. Crossbreeding of prolific native Garole sheep with other indigenous sheep subject to availability of sufficient milk with the ewes to sustain twins/triplets should be attempted at different locations of the country so that their reproductive efficiency could be increased. The fecundity gene should be detected at an early age in the Ram Lambs born out from such crosses.

DRAFT SHEEP BREEDING POLICY - 2023 FOR ANDHRA PRADESH.

NEED FOR BREEDING POLICY:

- Breeding infrastructure of sheep is very minimum. This may be due to the highly unorganized nature of the sector. Majority of the population in Andhra Pradesh are Non Vegetarians. With the Existing production system the Demand for meat cannot be met. There is a need to accelerate mutton production through improved Nutrition, Breed improvement, Reproduction and Health Cover.
- Structured breeding policy is required to improve average productivity and improve the reproductive efficiency, health status, body weight, quality and quantity of meat and wool, increase the availability of Quality males for breeding and Propagation of AI.

OBJECTIVES:-

Through the creation of breeding policy for Sheep following Objectives are being proposed:-

- Genetic improvement for production traits of indigenous breeds of Sheep through selective breeding and upgrading.
- Rearing and distribution of improved Rams.
- Distribution of Rams after testing them for important sexually transmitted diseases.
- Conservation of important indigenous breeds.
- Castration and culling of lower body weight and less productive Rams and its subsequent replacement by the elite Rams in a phased manner.
- To improve the productivity of sheep by promoting and disseminating the technologies developed by the research system.
- To promote conservation and genetic up gradation of important indigenous breeds of sheep in the state
- To ensure transmission and application of improved breeding and management technology to the doorstep of the farmers and the entrepreneurs.

DISTRICT WISE SHEEP POPULATION AS PER 2019 LIVESTOCK CENSUS:

Sl.No	Name of the District	Sheep population	% share	Rankings
1	Alluri SitaramaRaju	193361	1.1	
2	Anakapalli	161641	0.9	
3	Ananthapuramu	2297300	13.00	2nd
4	Annamayya	1744686	9.9	3rd
5	Bapatla	427523	2.4	
6	Chittoor	501893	2.8	
7	East Godavari	171263	1.00	
8	Eluru	526836	3.0	
9	Guntur	125451	0.7	
10	Kakinada	141229	0.8	
11	Konaseema	25111	0.1	
12	Krishna	219734	1.2	
13	Kurnool	1103043	6.3	5th
14	Nandyal	882914	5.0	8th
15	NTR	234933	1.3	
16	Palnadu	469424	2.7	
17	Parvathipuram Manyam	207451	1.2	
18	Prakasam	1567122	8.9	4th
19	Spsr Nellore	1095197	6.2	6th
20	Sri Satyasai	2629287	14.9	1st
21	Srikakulam	623641	3.5	
22	Tirupati	760733	4.3	
23	Visakhapatnam	46739	0.3	
24	Vizianagaram	448154	2.5	
25	West Godavari	38621	0.2	
26	YSR	983684	5.6	7th
	Total	17626971		

PROPOSED INTERVENTIONS FOR BREED IMPROVEMENT AND GENETIC IMPROVEMENT IN A.P

The state recognizes the climate resilient indigenous breeds of Sheep & Goat which are evolved over years and are well adapted to the local agro-climatic conditions.

Selective breeding among the recognized breeds in their breeding tracts and **upgrading the non-descriptive sheep** with the recognized breeds shall be the best option.

Since the other breeding methods like crossbreeding tried earlier did not yield favourable results with regard to production and on the other hand it led to high disease incidence; mortality and reduced reproductive performance.

Breed improvement through Selective breeding among the recognized breeds in their breeding tract and Nondescript Sheep in the tract to be upgraded with the breed of specific breeding tract.

GENERAL RECOMMENDATIONS OF THE DRAFT SHEEP BREEDING POLICY

1. The university Livestock Research Stations and State Government Farms in the breeding tracts may be utilized in cooperation with farmer's flocks in Open nucleus breeding system to produce superior rams and supply to the farmers.
2. Introduction of other breeds of indigenous or exocitc sheep in the field may be permitted only after detailed studies in university/Government/selected farmer's flocks.

3. Identification of rams and exploration of molecular genetic techniques for improving prolificacy.
4. Organization of sheep shows in the breeding tracts.
5. Extension activities of the department and the University to be strengthened to educate and guide the farmers on the breeding programmes keeping in view the long term interests of the farmers and need for conservation of indigenous germ plasm.
6. Avoiding inbreeding in the flocks.
7. Registration of breeders, breeders' flocks and superior animals.
8. While implementing the above breeding policy, there is need for considering the options in feeding, management, healthcare and marketing along with service and input delivery mechanisms, reading systems in the changing irrigation and agricultural scenario, poverty alleviation programmes and financing schemes etc.
9. Comprehensive sheep development programme: The above options may be discussed in a separate forum for formulating comprehensive sheep development programme for the state.

BREED IMPROVEMENT THROUGH SELECTIVE BREEDING:

Selective breeding in the breeding tract of Nellore, Nagavali and Macherla for improving the breed varieties. Selective breeding may be done within varieties like Jodipi, Palla and Brown and inbreeding of varieties may be avoided.

a) **Nellore Sheep Breeding tract:** This includes all Rayalaseema districts, south coastal districts of A.P

Nellore, Chittoor, Kadapa, Kurnool (other than Bellary tract), Anantapur (other than bellary tract), Prakasam, Guntur (Other than Palnadu area), Krishna, West Godavari and East Godavari: Nellore Rams are to be used on Nellore ewes and also non descriptive ewes.

1. Selective breeding within Nellore varieties of Jodipi, Palla and Brown for improving the varieties.
2. Conservation of Palla variety by avoiding the introduction of Jodipi/Brown rams into palla breeding area i.e., Atmakur and Podalakur mandals and nearby villages in Nellore district and also by keeping a flock of Palla sheep in University/Government farms in the area.
3. Nondescript sheep in the tract to be upgraded to the existing variety in the area.
4. The University livestock research stations and government farms in the breeding tract may be utilized to produce superior rams for supply to farmers
5. Interbreeding of varieties should not be encouraged.

b) **Nagavali sheep breeding tract:** This includes Vizianagaram and Srikakulam districts.

1. Selective breeding within Nagavali for improving the breed.
2. Nondescript sheep in the tract to be upgraded to Nagavali.
3. A large flock of Vizianagaram sheep may be established at Livestock Research station, Garividi to produce superior rams for supply to farmers.

c) Macherla sheep breeding tract:

This includes parts of Guntur, Krishna, and Prakasam districts along the Krishna River.

1. Selective breeding within Macherla breed (Evaluation completed, yet to be recognized by NBAGR) for improving the breed.
2. Non-descript sheep in the breeding tract to be upgraded to Macherla.
3. A large flock of Macherla brown sheep may be established at suitable location in Palnadu area to produce superior rams for supply to farmers.

d) Deccani & Bellary Sheep Breeding tracts:

Parts of Kurnool and Ananthapur districts bordering Bellary district of Karnataka state.

1. Selective Breeding within Deccani and Bellary for improving the breed.
2. Use of superior Deccani rams from Maharashtra and white Deccani rams from Karnataka/Maharashtra as per need.
3. Nondescript Sheep in the tract to be upgraded to Deccani and Bellary.

e) Diamond or Chilla Mingi (Local Name):

1. This includes parts of Bapatla, Parchuru, ChinaGanjam, Chirala, Chilakaluripet and parts of Guntur, Addanki and Macherla.
2. Survey, characterization and evaluation of the breed may be made for its recognition.

DISTRICT WISE SHEEP BREEDS AND RECOMMENDED BREEDING POLICY

S No	District	Existing Breed	Recommended Policy
1	Srikakulam	Nagavali	Selective breeding of Nagavali, upgrading ND with Naagavali
2	Vizianagaram	Nagavali	Selective breeding of Nagavali, upgrading ND with Naagavali
3	Vizag	Nellore brown	Selective breeding of Nellore upgrading ND with Nellore
4.	East Godavari	ND	Nellore Jodipi/Brown as per the farmers choice
5.	West Godavari	ND	Nellore Jodipi/Brown as per the farmers choice
6	Krishna	Macherla	Selective breeding of Macherla
7	Guntur	Macherla	Selective breeding of Macherla
8	Prakasam	Nellore Jodipi, Macherla	Selective breeding of Nellore and Macherla upgrading ND with Nellore Jodipi
9	SPSR Nellore	Nellore Jodipi, Palla	Selective breeding of Nellore Jodipi upgrading ND with Nellore Jodipi

10	Chittoor	Nellore Jodipi	Selective breeding of Nellore brown upgrading ND with Nellore brown
11	Kadapa	Nellore Brown	Selective breeding of Nellore brown upgrading ND with Nellore brown
12	Kurnool	Nellore Brown , Deccani	Selective breeding of Nellore brown upgrading ND with Nellore brown Selective breeding of Deccani with elite Rams from Maharashtra Cross breeding of Deccani with Muzafarnagari
13	Ananthapur	Nellore brown, Deccani	Selective breeding of Nellore brown upgrading ND with Nellore brown Selective breeding of Deccani with elite Rams from Maharashtra Cross breeding of Bellary/Bannur with Hissardale

STRATEGIES:

Create awareness among the shepherds or farmers about the genetic improvement of the animals is passed on from generation to Generation are more likely to sustain.

1. Distribution of superior ram lambs to the farmers for genetic improvement of their flock.
2. Distribution of Elite Breeding Rams to the farmers for genetic improvement of their flock.

STRENGTHENING OF GOVERNMENT SHEEP FARMS:

Need to strengthen the infrastructure, breeding stock, dedicated human resources, breeding stock and budget etc for supply of superior Ram lambs through Societies for systematic implementation of the programme to keep simple pedigrees so that the performance of the parents/offspring. Record Keeping or Documentation need to assess the progress.

The farms shall work on contract agreement for supply of superior Ram lambs to needy societies with record and traceability particulars. Targets on indicators assigned shall be monitored by the supervisory officers as per Standard Operating Procedures (SOP) of sheep farms, suitable funding of the farms need to be made.

OPEN NUCLEUS BREEDING SYSTEM:

- Genetic improvement of non-descriptive sheep breeds through a systematic breeding approach through introduction of superior quality Nellore breeding rams
- ONBS concept comprises a Nucleus herd established under controlled conditions to facilitate Selection
- Nucleus is established from the best animals selected from the base population.
- Recorded individually and the best animals are selected to form the elite herd of nucleus.
- Two-way direction of gene flow downward from nucleus to lower herd (multiplier) and upward from lower herd to upper herd nucleus by introduction of Superior animals

NUCLEUS TIER:

- The nucleus may contain either the farm bred rams or the elite rams chosen from among the farmers flocks
- The nucleus (either a Government District Farm or University Farm) should have sufficient breeding stock to satisfy the demands from the herds or farmers flocks.

- Under the nucleus (for a particular breed improvement), 3 to 5 cooperating units (AH Dept., Sheep Federation, University centers and Govt. Sheep Farms /new entrepreneur etc.) are to be engaged in monitoring the breeding and improvement plans, depending up on distribution of flocks and feasibility in coverage.
- Each cooperating unit should have a large sizeable farmers flocks (100 farmer's units) covering wide area in the breeding tract. Under this, a total of 300 to 500 farmer flocks are covered and genetic improvement could be made in larger populations.
- In addition, the cooperating centers have to make detailed recording of performance to study the impact of the programme and change the rams among the farmers flock once in a year to avoid inbreeding.

PROMOTION OF (Open Nucleus Breeding System) ONBS THROUGH PPP MODE:

Duration of a Genetic improvement programmes has to be at least 10 years and such programmes require strong institutional support and consistent policies

1. In organized flocks/Semi intensive method: To raise the genetic improvement/merit in the animals, identify and priority should be given to introduction of good quality Rams from the Nucleus flock.
2. Encourage the farmer for replacement of the inferior quality rams with genetically improved ones rather than providing subsidy/free of cost.
3. Register/tie up with the farmers for promoting the programme and awareness and empowerment on importance of genetic improvement in the flock for better weight gains and profitability in sheep rearing.

4. Regular monitoring and field performance recording on production parameters in the flock helps to identify genetically superior individuals and it gives reliable data/traceability. The services of field functionaries like Jeevamitra/ Gopalamitra/AHAs etc are to be involved in recording the data. Incentives should be provided for maintenance of data in the field level.

5. There should be clear guidelines (SOP) on how the superior germ plasm disseminates in the flocks which helps to improve the

   - Electronic tagging of the animal
   - Weighing machines provided for recording weight gains
   - Recording of productive parameters

6. Incentives should be provided for record maintenance/keeping for a period of 3 years to detect the genetic improvement in the flocks.

GENETIC IMPROVEMENT THROUGH CROSS BREEDING:

- Non Descriptive sheep in the tract to be upgraded to the existing variety in that area as per the farmers preference with indigenous local breed.
- There is need to improve the indigenous breeds to raise their production potential. It is proposed to cross breed Deccani with Muzafarnagari in Kurnool district to improve the Mutton and wool production and cross the Bellary with Hissardale to improve the wool quality as these are indigenous breeds when compared to previous experiments with exotic breeds.

IMPROVED BREEDING TECHNOLOGIES THROUGH ARTIFICIAL INSEMINATION:

a) The Non-Descript (ND) sheep can be improved through genetic up gradation by AI. Because of the nomadic nature of Sheep farming, the AI activities may not be feasible all over the state. However, efforts should be made to cover the entire sheep population through Artificial Insemination in a phased manner.

b) Encourage to establish elite herd of indigenous breeds by the way of Artificial Insemination(AI): Semen stations can also be established/strengthened to produce superior germ plasm from these elite animals and the same should be transferred at farmers door step for production of upgraded animal.

c) Artificial Insemination technicians/paravets will be adequately trained for delivery of extension and other services at the farmers' doorstep. Skill building of the key personal will be taken up at a regular interval.

GENETIC IMPROVEMENT THROUGH INTRODUCTION OF AVISHAAN SHEEP

- Encouraging the establishment of AVISHAAN Sheep multiplication Farms:
- Avishaan sheep is a prolific sheep which is developed through crossing of three indigenous sheep breeds Garole, Malpura and Patanwadi.This sheep has higher litter size, more litter weight and sufficient milk for their neonates. It will fulfil the increasing meat demand on commercial lines.

- The Non-Descript (ND) sheep can be improved through Artificial Insemination
- Make use of superior germplasm from these elite AVISHAAN Rams for Artificial Insemination and the same should be transferred at farmers door step for production of upgraded animal.

IDENTIFICATION OF RAMS AND EXPLORATION OF MOLECULAR GENETIC TECHNIQUES FOR IMPROVING PROLIFICACY.

Isolation and propagation of twinning ewes in a flock to identify the Fecb gene (Fecundity gene) for improving prolificacy among farmer flocks.

EXTENSION ACTIVITIES:

Extension activities of the department and the University to be strengthened to educate and guide the farmers on the breeding programmes keeping in view the long term interests of the farmers and need for conservation of indigenous germplasm.

HUMAN RESOURCE AND TRAINING

The focus need to be on building strong infrastructure for extension activities, breed up -gradation, production and management of the research and development facilities, etc..This would help for the technical up gradation of technical /non-technical progressive livestock farmers and service providers by imparting necessary skill based training in different aspects of livestock management to provide necessary service to farmers, early detection and treatment of diseases and other related issues.

ORGANIZATION OF SHEEP SHOWS IN THE BREEDING TRACTS.

Breeding Rams are the key players by which genetic improvement can be made in a flock. To highlight its importance, there is a need to organize Breeding Ram shows to create awareness to the shepherds on the importance of maintaining elite breeding ram in the flock. Breeding rams are exhibited and judged based on the phonotypical breed characters in these shows.

REGISTRATION OF BREEDERS, BREEDERS' FLOCKS AND SUPERIOR ANIMALS

On the lines of cattle herd registration for encouraging farmers to rear better Rams and good flocks